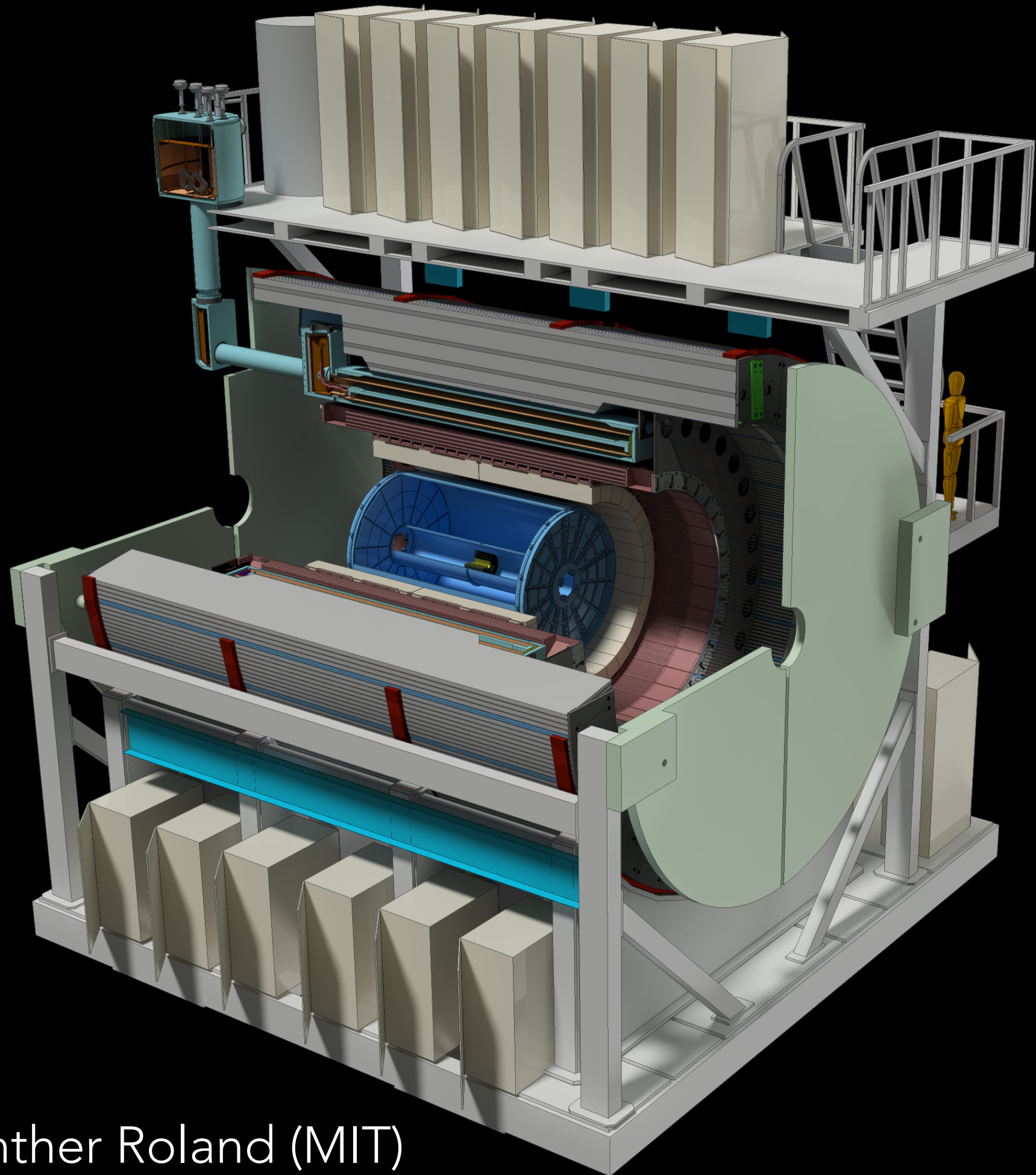


sPHENIX  
EC meeting  
Feb 23, 2017



Dave Morrison (BNL), Gunther Roland (MIT)

# Topics

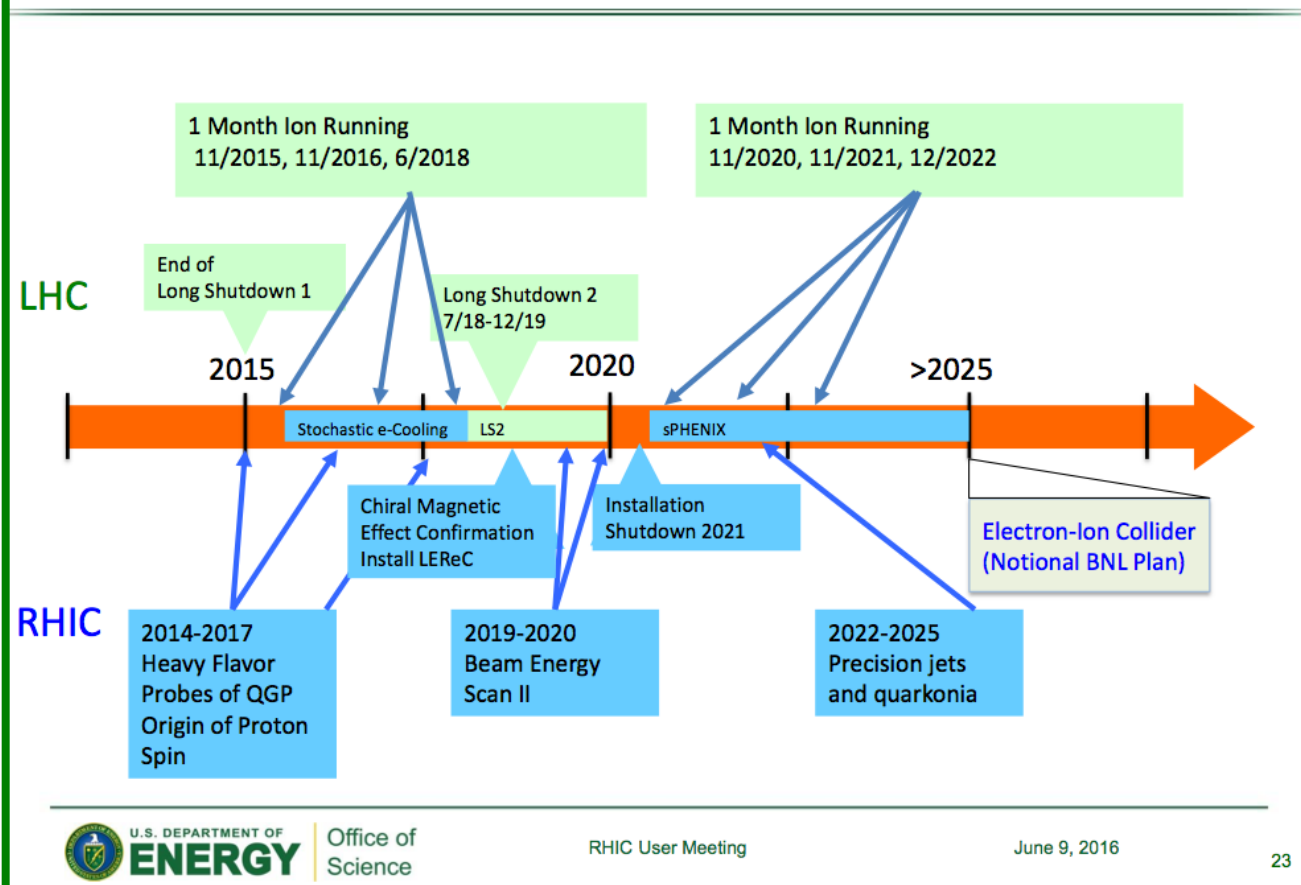
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- sPHENIX, DOE and a MAPS vertex detector
- Project update - what happened in the last year
- New institutions
- Feedback for collaboration meeting planning
- Feedback after 1st year of sPHENIX collaboration
- Any other project/collaboration business

# sPHENIX, DOE and a MAPS vertex detector

- Even after CD-0, some of us still suffer occasional bouts of anxiety: “How can we plan for this or that if we only run for one or two years?”

## RHIC / LHC Timeline

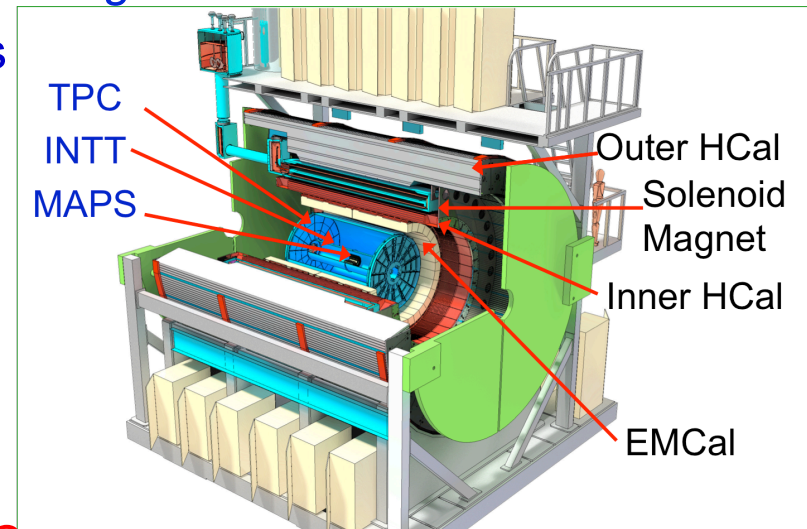


## Also On The First Day

- Dr. T. Hallman stated U.S. DOE Nuclear Physics “is committed to building sPHENIX”

- sPHENIX provides full jet and HF capability in order to:

- ▶ Probe the sQGP with the highest resolution possible at RHIC
- ▶ Perform vital comparisons to same probes at LHC



[M. Connors: Design, status and schedule of the sPHENIX experiment at RHIC](#)



# sPHENIX CD-0 “Mission-need” statement

**Mission Need Statement  
for an Upgrade to the  
Pioneering High Energy Nuclear Interaction  
eXperiment (PHENIX)  
known as Super PHENIX (sPHENIX)  
as a Major Item of Equipment  
Non-Major Systems Acquisition**

Office of Nuclear Physics  
Office of Science  
U.S. Department of Energy

Date Approved:  
September 2016

1

**Mission Need Statement  
for an Upgrade to the  
Pioneering High Energy Nuclear Interaction eXperiment (PHENIX)  
known as Super PHENIX (sPHENIX)  
as a Major Item of Equipment at the  
Brookhaven National Laboratory**

Submitted by:

 Date: 8/15/16  
James Szwinski, Acting Program Manager for Heavy Ion Nuclear Physics  
Office of Nuclear Physics, Office of Science, DOE

 Date: 9/17/16  
Elizabeth Bartosz, Program Manager for Nuclear Physics Instrumentation  
Office of Nuclear Physics, Office of Science, DOE

 Date: 9/17/16  
Jeanne Gillo, Director, Facilities and Project Management Division  
Office of Nuclear Physics, Office of Science, DOE

 Date: 9/17/16  
Timothy J. Hahn, Associate Director  
Office of Science for Nuclear Physics, DOE

Concurrence:

 Date: 9/19/16  
Stephen W. Meador, Director  
Office of Project Assessment, Office of Science, DOE

 Date: 9/19/2016  
Patricia M. Dehmer, Deputy Director for Science Programs  
Office of Science, DOE

Approval:

2

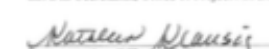
Approval:

**Critical Decision 0, Approval of Mission Need  
Upgrade to the Pioneering High Energy Nuclear Interaction eXperiment (PHENIX)  
known as Super PHENIX (sPHENIX)**

**Recommendations:**

The undersigned “Do Recommend” (Yes) or “Do Not Recommend” (No) approval of CD-0, for the sPHENIX Project.

 9-27-2016 Yes ☒ No ☐  
ESAAB Secretariat, Office of Project Assessment Date

 Yes ☒ No ☐  
Representative, Office of Budget Date

 9-21-16 Yes ☒ No ☐  
Representative, Safety and Security Policy (ESS&H) Date

 9/27/16 Yes ☒ No ☐  
Representative, Safety and Security Policy (Security) Date


 9/27/16 Yes ☒ No ☐  
Representative, Operations Program Management  
(Facilities and Infrastructure) Date

 9/27/16 Yes ☒ No ☐  
Representative, Non-Proposed SC Program Office Date

 9/27/16 Yes ☒ No ☐  
Representative, NNSA Program Federal Project Director Date

**Approval:**

Based on the information presented in this approval document and an ESAAB Equivalent Review,  
CD-0, Approval Mission Need, for the sPHENIX is approved.

 9/27/2016  
Timothy J. Hahn, Project Management Executive  
Associate Director of Science for Nuclear Physics  
Office of Science, DOE

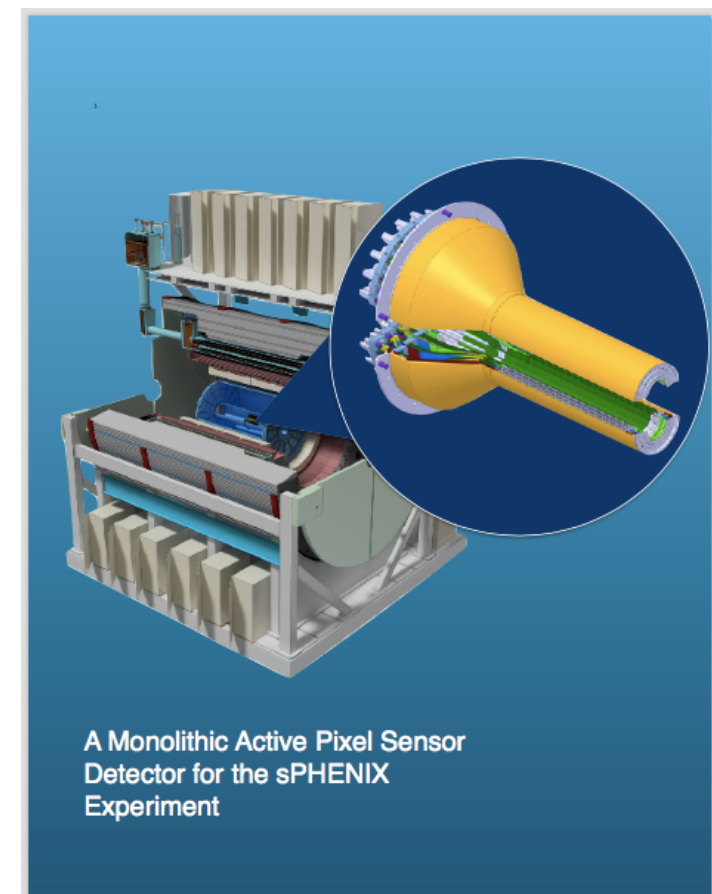
## 8. Goals for Limitations on Recurring or Operating Costs

The cost for operating the detector will be included within the annual RHIC operating budget which will be entirely funded by NP. The operating cost is estimated to be about \$10 million FY 2016 annually, for about five years; this could be extended if new physics is found which justifies further running.

# 2016-2017 developments

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- June 2016: Baseline (RHIC ops funded) with 1 (2) MAPS layers, at cost of TPC, EMCAL, DAQ,...
- July-September 2016: LANL LDRD funded; indications of alternative funding schemes (outside of RHIC ops)
- Fall 2016: Project plan with MAPS telescope in baseline; 3-layer MAPS and 4-layer INTT as parallel projects
- early Feb 2017: “MVTX” pre-proposal completed; sent to DOE through BNL (after brief detour)
- mid Feb 2017: BNL@DOE budget briefing



# Recent developments, cntd

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- Budget briefing:
  - DOE re-affirms priorities and timeline for RHIC future in strong terms, matching time-order: **BES-II, sPHENIX, EIC R&D**
- MVTX, MAPS-telescope:
  - Pre-proposal submitted, but viewed as premature by DOE; Productive discussion between project, co-spokespeople and ALD over the last days - see next slide

# sPHENIX/MVTX strategy

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- Twin goals:
  - CD-1 review (late summer); minimize risk for review - no MAPS telescope in baseline; focus of sPHENIX project
  - Add 3-layer MVTX funded outside RHIC ops; focus of MVTX consortium
- MVTX justification based on **broad** HF program as third pillar of sPHENIX physics program, in response to need and potential of HF QGP probes as shown at e.g. QM 2017

# sPHENIX, MVTX strategy, cntd

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- Timeline:
  - CD-1: review prep by late spring; review late summer?
  - MVTX:
    - “directors” cost/schedule/science review (late spring)
    - Updated pre-proposal by summer (incl. response to review comments)
      - Proposed funding scheme
      - Schedule boundaries
      - Expanded physics case
  - In preparation of MVTX review, pre-proposal:
    - Meeting of MVTX consortium ALDs, directors to develop funding scheme
    - Communication with DOE through RHIC ALD to explore feasibility of funding scheme, funding profile, proposal submission timeline (likely post CD-1)



# New twist

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- Call for contributions to 2017 PAC meeting (6/15-16) includes this:

*“...In addition, I invite the STAR and sPHENIX Collaborations to present letters of intent for proposals of modest forward upgrades to their detectors for data taking after 2021 for consideration by the PAC....”*

- Need to discuss response to this “invitation”
- Need to leave no doubt in PAC’s mind of relative priorities of a STAR forward upgrade vs sPHENIX MVTX

# New Institutions

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- Purdue (Wei Xie) has applied to join collaboration. Excellent laboratory facilities for silicon work.
- Expressions of interest from CCNU, Peking University. ALICE, but no other LHC, commitments. Could be part of building staves for sPHENIX MAPS.
- Interest in MVTX project from Charles University (Prague), Czech Technical University (Prague)
- Excellent growth in collaboration strength – mostly driven by interest in MAPS and heavy flavor physics program it enables.

Dear Dave,

A group of physicists from **Saclay** is discussing a potential participation to sPHENIX, as a physics project of its own but also as a precursor to EIC. Indeed, we have active groups working on both QGP-related physics (Alice) as well as nucleon structure studies (Compass, JLab) at our division. We also plan to open a permanent position this year in order to lead the EIC-related activities. I have heard from Abhay that even though it wasn't openly advertised, sPHENIX had received CD0 approval at the end of 2016.

In order to kick-start this discussion, we would like to invite two physicists involved in the sPHENIX experiment to Saclay for a small internal workshop. It would consist of around two days of discussions/presentations, during which a general seminar would be given to the division. Several names came up: your name of course as spokesperson, but also Edward O'Brien (since we would be willing to contribute to the TPC project, he apparently is involved). Any other suggestions are of course more than welcome.

The meeting would ideally happen end of March but of course, the date would depend on the availability of the people willing to come to Saclay as well as our own availability. All expenses would be covered during the stay at Saclay.

I put Thomas in copy as he closely followed our discussions regarding our involvement in BNL.

Please let me know your thoughts on this idea of a workshop to talk about both the sPHENIX physics and the ongoing hardware/software projects.

Best regards,

Franck

# Summer collaboration meeting

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- Many dates in early Summer already occupied:
  - INT program “Precision Spectroscopy of QGP Properties with Jets and Heavy Quarks”: May 1- June 8 (workshops 5/8-12, 6/5-8)
  - PAC meeting: June 15-16 (Thu-Fri)
  - RHIC User’s meeting: June 20-23 (Tue-Fri)
  - **Proposal: Mon-Tue, June 12-13**
- Move to more regular EC meeting schedule: Meet mid-April

# Any issues anyone would like to bring up?

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